



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,015	08/18/2003	Todd S. Emrick	7163	2962

22922 7590 03/27/2007  
REINHART BOERNER VAN DEUREN S.C.  
ATTN: LINDA KASULKE, DOCKET COORDINATOR  
1000 NORTH WATER STREET  
SUITE 2100  
MILWAUKEE, WI 53202

EXAMINER
----------

FEELY, MICHAEL J

ART UNIT	PAPER NUMBER
----------	--------------

1712

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/27/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/643,015

Applicant(s)

EMRICK ET AL.

Examiner

Michael J. Feely

Art Unit

1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 January 2007.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☒ Claim(s) 6-10 is/are allowed.  
6) ☒ Claim(s) 1-5, 11, 12, 14, 15, 18 and 20-23 is/are rejected.  
7) ☒ Claim(s) 13, 16, 17, 19 and 24-26 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 15 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_.

Art Unit: 1712

## **DETAILED ACTION**

### ***Pending Claims***

Claims 1-26 are pending.

### ***Declarations Under 37 CFR 1.131***

1. The declarations filed on December 13, 2004 and January 3, 2007 under 37 CFR 1.131 have been considered but are ineffective to overcome the Dubertret et al. reference (Pub. No.: US 2004/0033345) reference.

Neither declaration states where the work was performed. The 37 CFR 1.131 affidavit or declaration must contain an allegation that the acts relied upon to establish the date prior to the reference or activity were carried out in this country or in a NAFTA country or WTO member country – *see MPEP 715.07(c)*.

Furthermore, neither declaration provides a sufficient explanation of the evidence. The affidavit or declaration and exhibits must clearly explain which facts or data applicant is relying on to show completion of his or her invention prior to the particular date. Vague and general statements in broad terms about what the exhibits describe along with a general assertion that the exhibits describe a reduction to practice "amounts essentially to mere pleading, unsupported by proof or a showing of facts" and, thus, does not satisfy the requirements of 37 CFR 1.131(b) – *see MPEP 715.07*.

***Response to Amendment***

2. The rejection of claims 12 and 13 under 35 U.S.C. 112, second paragraph, *has been overcome by amendment.*

3. The rejection of claims 1, 4, and 5 under 35 U.S.C. 102(a) as being anticipated by Billancia et al. (*see entry A7 on IDS dated 2/7/05*) *has been overcome by amendment.*

4. The rejection of claims 11 and 12 under 35 U.S.C. 102(e) as being anticipated by Ekwuribe et al. (US Pat. No. 6,380,405) *has been withdrawn.*

***Claim Rejections - 35 USC § 102***

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. The rejection of claims 1-5, 14, 15, 18, and 20-23 under 35 U.S.C. 102(e) as being anticipated by Dubertret et al. (Pub. No.: US 2004/0033345) *stands for the reasons of record.*

Regarding claims 1-5, Dubertret et al. disclose (1) a composite (paragraph 0017) comprising a metallic nanoparticulate substrate component (paragraphs 0018-0022) and a polymeric ligand component (paragraphs 0034-0037), said ligand component comprising a nitrogenous coupling moiety coupling said ligand component and said substrate component (paragraphs 0051, 0056-0057, and 0066-0067: *indirectly linked via the hydrophobic core layer*); (2) wherein said substrate comprises a nanoparticle selected from CdSe, CdS, CdTe, ZnS, ZnSe, Co and combinations thereof (paragraphs 0018-0022); (3) wherein said nitrogenous moiety is selected from amino, pyridinyl and aminopyridinyl moieties (paragraphs 0056-0057 and 0066-0067); (4) wherein said polymeric ligand component is selected from poly(ethylene glycol),

Art Unit: 1712

poly(hexaethylene glycol), poly(hexadecylethylene glycol), poly( $\epsilon$ -caprolactone), poly(lactide), poly(glycolide), polyglycidyl, polypropylene oxide and combinations thereof (paragraphs 0056-0057 and 0066-0067); and (5) wherein said polymeric component comprises poly(ethylene glycol), said component with a terminus comprising a functional group moiety selected from hydroxyl, alkyl, alkoxy, carboxylate, thymine, ammonium salt and substituted ammonium salt moieties (paragraphs 0056-0057 and 0066-0067).

Regarding claims 14, 15, and 18, Dubertret et al. disclose (14) a system for nanoparticle dispersion, said system comprising: a composite comprising a nanoparticulate substrate (paragraphs 0018-0022) and a first ligand component (paragraphs 0032-0033), said composite in a first liquid medium (paragraphs 0032-0033); and a second ligand component in a second liquid medium, said second ligand component at least partially soluble in said second liquid medium (paragraphs 0034-0037) and selected from poly(ethylene glycol), poly(hexaethylene glycol), poly(hexadecylethylene glycol), poly( $\epsilon$ -caprolactone), poly(lactide), poly(glycolide), polyglycidyl, polypropylene oxide and combinations thereof (paragraphs 0056-0057 and 0066-0067), said second ligand component comprising a nitrogenous coupling moiety (paragraphs 0066-0067); (15) wherein said second ligand component has an affinity for said nanoparticulate substrate greater than said first ligand component (paragraphs 0032-0037, 0051, 0056-0057, and 0066-0067); and (18) wherein said nanoparticulate substrate comprises CdSe (paragraph 0021) and said second ligand component has an affinity for said nanoparticulate substrate greater than said first ligand component (paragraphs 0032-0037, 0051, 0056-0057, and 0066-0067).

Regarding claims 20-23, Dubertret et al. disclose (20) a method of using ligand solubility to disperse a nanoparticulate substrate (paragraphs 0010-0012 and 0017), said method

Art Unit: 1712

comprising providing a composite comprising a nanoparticulate substrate (paragraphs 0018-0022) and a first ligand component (paragraphs 0032-0033); and contacting said composite with a second ligand component, said second ligand component in a second liquid medium (paragraphs 0034-0037), said second ligand component comprising a nitrogenous coupling moiety (paragraphs 0066-0067) and at least partially soluble in said second liquid medium (paragraphs 0034-0037), said contact with said second ligand component dispersing said nanoparticulate substrate in said medium (paragraphs 0010-0012 and 0017 and 0034-0037); (21) wherein said substrate comprises a nanoparticle selected from CdSe, CdS, CdTe, ZnS, ZnSe, Co and combinations thereof (paragraphs 0018-0022); (22) wherein said polymeric ligand component is selected from poly(ethylene glycol), poly(hexaethylene glycol), poly(hexadecylethylene glycol), poly(e-caprolactone), poly(lactide), poly(glycolide), polyglycidyl, polypropylene oxide and combinations thereof (paragraphs 0051, 0056-0057, and 0066-0067); and (23) wherein said polymeric ligand component comprises poly(ethylene glycol) (paragraphs 0056-0057, and 0066-0067).

7. Claims 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Hakimi et al. (US Pat. No. 5,849,860).

Regarding claims 11 and 12, Hakimi et al. disclose: (11) a polymeric compound comprising pyridine ligand substituted with a poly(ethylene glycol) component (column 2, lines 10-43) comprising at least 2 ethylene glycol monomers (column 3, lines 28-52) and a terminus comprising a functional group moiety selected from hydroxy, alkyl, alkoxy, carboxylate, thymine, ammonium salt and substituted ammonium salt moieties (column 2, lines 10-43); and (12) comprising up to about 100 ethylene glycol monomers (column 13, lines 28-52).

Art Unit: 1712

8. Claims 1-3, 20, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Siiman et al. (US Pat. No. 6,235,540).

Regarding claims 1-3, Siiman et al. disclose: *(1)* a composite comprising a metallic nanoparticulate substrate component (column 9, line 25 through column 10, line 23; Example 8) and a polymeric ligand component (column 9, line 25 through column 10, line 23; Example 8), said ligand component comprising a nitrogenous coupling moiety coupling said ligand component and said substrate component (Example 7); *(2)* wherein said substrate comprises a nanoparticle selected from CdSe, CdS, CdTe, ZnS, ZnSe, Co and combinations thereof (column 9, line 25 through column 10, line 23; Example 8); and *(3)* wherein said nitrogenous moiety is selected from amino, pyridinyl and aminopyridinyl moieties (column 9, line 25 through column 10, line 23; Example 8).

Regarding claims 20 and 21, Siiman et al. disclose *(20)* a method of using ligand solubility to disperse a nanoparticulate substrate, said method comprising providing a composite comprising a nanoparticulate substrate and a first ligand component (column 9, line 25 through column 10, line 23; Example 8); and contacting said composite with a second ligand component, said second ligand component in a second liquid medium (column 9, line 25 through column 10, line 23; Example 8), said second ligand component comprising a nitrogenous coupling moiety (column 9, line 25 through column 10, line 23; Example 8) and at least partially soluble in said second liquid medium (column 9, line 25 through column 10, line 23; Example 8), said contact with said second ligand component dispersing said nanoparticulate substrate in said medium (column 9, line 25 through column 10, line 23; Example 8); and *(21)* wherein said substrate

Art Unit: 1712

comprises a nanoparticle selected from CdSe, CdS, CdTe, ZnS, ZnSe, Co and combinations thereof (column 9, line 25 through column 10, line 23; Example 8).

***Allowable Subject Matter***

9. Claims 6-10 are allowed.
10. Claims 13, 16, 17, 19, and 24-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Examiner's Suggestion***

11. The following are suggestions to put this application in condition for allowance.
  - *If applicant chooses to file a proper 1.1.31 declaration to overcome Dubertret et al.*
    - Incorporate the limitations of claim 4 into claim 1;
    - Incorporate the limitations of claim 13 into claim 11; and
    - Incorporate the limitations of claim 22 into claim 20.
  - *If applicant chooses not to file a proper 1.1.31 declaration to overcome Dubertret et al.*
    - Replace "monodentate nitrogenous" with --monodentate pyridinyl-- in claim 1;
    - Incorporate the limitations of claim 13 into claim 11;
    - Incorporate the limitations of claim 16 or claim 19 into claim 14; and
    - Incorporate the limitations of claim 24 and 22 into claim 20.



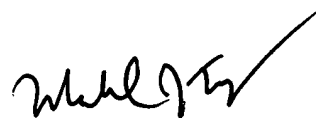
Art Unit: 1712

*Communication*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Feely whose telephone number is 571-272-1086. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Michael J. Feely  
Primary Examiner  
Art Unit 1712

March 23, 2007

**MICHAEL FEELY**  
**PRIMARY EXAMINER**